Dated: 02/22/01

EXHIBIT II

MARS SAMPLE RETURN SCIENCE OBJECTIVES

Science shall drive the Mars Exploration Program and the Sample Return Mission. Sample return shall enable greater understanding of Mars than is otherwise possible with remote sensing and in situ investigations. Analyses of returned samples shall address the program's goals in understanding whether life ever existed on Mars, the past and present climate, the interior and surface of the planet, and characterize the Martian environment, particularly as it influences future human exploration.

Science Baseline

- The objective of the mission is to return to Earth and analyze Martian samples. However, Earth handling and analysis of the samples are deemed to be outside the scope of this contract.
- The total mass of samples returned by a first mission shall be greater than 500g
- Returned samples shall include rock, soil and atmosphere and shall be selected using a payload of scientific instruments and sub-surface sampling tools
- Sample diversity shall be assured by providing mobility for the sample selection and collection payload
- Payload mobility shall be no less than 1 km, measured as a radial-distance from the landing site, in a few months
- A sample from a depth of at least 2m shall be returned
- Any landing site within 15 degrees of the equator and at an altitude below +1.5 km (with respect to the MGS/MOLA-based mean reference) shall be accessible
- Landing accuracy shall be no worse than 50 km (semi-major axis of the three-sigma landing ellipse).

Desired Increases in Science Content

- Survival of surface science assets after the sample has left the surface of Mars, extending in situ investigations to a total of at least two years
- Extended mobility beyond the 1 km sample return mobility requirement to at least beyond the perimeter of the landing uncertainty footprint.
- Improve landing accuracy to < 5 km.
- A Sample from a depth of at least 10 m.
- Landing site accessibility to + 45 degrees from the equator.

Potential Decreases in Science Content

- Reduced or eliminated mobility: collect sample at > 10 m from Lander
- Reduced sample depth requirement to ½ m.
- Reduced landing accuracy: < 200 km

The Program desires an understanding of the trades (cost, risk, etc.) associated with increased or decreased science content.